

DATE: June 10, 2004

TO: Region Engineers
Region Delivery Engineers
TSC Managers
Resident/Project Engineers
Region Construction Engineers
Region/TSC Development Engineers

FROM: Larry E. Tibbits
Chief Operation Officer

John C. Friend
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SUBJECT: Bureau of Highway Instructional Memorandum 2004-19
Portable Changeable Message Sign Guidelines

The Office of Highway Safety Planning has required the use of portable changeable message signs to display safety related messages during the holiday periods. The *Portable Changeable Message Sign Guidelines* have been revised to allow this use. The revisions have also added, from the 2003 Federal Manual of Uniform Traffic Control Devices, additional standard abbreviations that may be used, a list of unacceptable abbreviations, emphasis on not including advertising of an event in the message, and placement information.

The content of the guidelines should be considered for all construction projects in 2004 that have not been turned in for advertising.

Chief Operations Officer

Engineer of Delivery

BOHD:T&S:MB:gb

Index: Traffic Control

Attachment

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Michigan Department of Transportation
Portable Changeable Message Sign (PCMS) Guidelines
(ENGLISH)

Application Guidelines for PCMS

PCMS have a variety of functions including: (1) ramp, lane and road closures, (2) traffic pattern changes such as temporary crossovers and width restrictions, (3) advisories on roadwork scheduling, (4) traffic management and alternate routing, (5) incident management, (6) warning of adverse road conditions, and (7) traffic operations control and (8) safety messages. Listed below are PCMS applications in priority order:

Advance Time Notification

- **Ramp Closures** - It is recommended that the message be displayed three to seven days prior to the closure. For weekend closures on freeways with high recreational/tourist travel, the message should be displayed longer, up to ten days, which would include two Thursdays prior to closures. The message should include the opening of the closure.
- **Lane Closures** - See Ramp Closures above.
- **Roadway Closures** - The advance notice message addresses the temporary closure (short duration) of roadways for planned work such as truss or bridge beam installations. For long term closures see Ramp Closures above.
- **Planned Maintenance Work** - It is recommended that the message be displayed a maximum of one week prior to the planned work and include the estimated completion date.

The message(s) during the actual closure/work will differ from those displayed prior to the event.

Information During Existing Events

- **Detour/Alternate Routes** - The message should recommend detours/alternate routes during ramp/lane/roadway closures. Messages such as "Alt Route Advised" or "Seek Alt Route" are discouraged.
- **Incident Management** - Roadway closures due to crashes and/or incidents which can not be addressed alone with static signing.

- **Special Event Traffic Conditions** - Unusual vehicle and/or pedestrian traffic patterns generated by sporting or charity events are examples for PCMS use. Under no circumstances shall the PCMS be used to advertise special events. Messages for special events should be designed such that advertising is not embedded in the message. The messages shall identify traffic conditions and a suggested remedy for those attending the special event and those using the same roadway to pass by the special event location.
- **Notice of Operations - Obstructed View** - Within unusual roadway geometrics, a PCMS device may be used as an advanced warning device in conjunction with static signing for fixed or moving operations. Unusual geometrics, such as curves or hills, provide an obstructed view to motorists coming upon the operation and the PCMS may provide additional notice.
- **Traffic Calming** - LIMITED USE of messages to inform motorists of closures are permitted. Such **messages** would indicate why a lane is closed (if not obvious) or when a lane will be reopened. For example, messages notifying of an estimated opening shall be displayed during the life of the closure.
- **Construction Zone Traffic Backups** - This involves monitoring congestion and backups (real time). This is potentially an ideal use for PCMS, but this requires constant updating and extensive resources. The traffic backup must be monitored every 15 to 30 minutes depending on the situation. The PCMS messages on delay times must be accurate.
- **Safety Messages** – Done in cooperation with the Office of Highway Safety Planning to promote motorists of safety awareness. For this use, the safety message shall not replace an active message required by the motorist. When a PCMS is used to display a safety message, the display format shall not be of type that could be considered similar to advertising displays. The display shall not include animation, rapid flashing, or other dynamic element, characteristic of sport scoreboards or advertising displays.

PROHIBITED PCMS USE

- Replacement of **Michigan Manual of Uniform Traffic Control Devices (MMUTCD)** required static signing or pavement markings.
- Lighted Arrow Replacement - The lighted arrow board is more visible, recognizable, and understood than a PCMS.
- Advance Notice of New Traffic Signal or Sign.
- Advertising of any kind.

Message Guidelines

Drivers must be able to see, read, and comprehend the message on the PCMS. The basic principles to insuring the proper operation (read) and providing the proper messages (comprehend) are message objective, message timing, and the message.

Message Objective

PCMS users should clearly establish the objective of the PCMS by considering the following questions:

QUESTIONS	EXAMPLE MESSAGE
What Happened?	(Lane closed)
Where?	(At Livernois)
What is the effect?	(Heavily Congested)
Who is affected?	(Utopia traffic)
What is advised?	(Use Williams Street)

The message should be designed to use the most important information and be condensed, as much as possible, to meet the requirements of message timing (see below).

Message Timing

Sequencing messages is typically used when situations dictate the need for more messages than can be displayed at one time on PCMS. The cycle time and duration of the message used is related to the operating speed on the highway. All message sequences shall consist of **A MAXIMUM OF TWO MESSAGES AND A TWO-SECOND DISPLAY TIME FOR EACH MESSAGE**. If additional sequences are needed a second PCMS shall be placed on the same side of the roadway, separated by at least 1000 feet.

Message

When operating a PCMS, it is essential to use messages that are **readily understood by drivers and accurate**. It is also important to properly describe the road work or incident location based on the expected audience. THE RELATIONSHIP THAT WE WANT WITH THE MOTORISTS OF MICHIGAN IS THAT OUR PCMS BOARDS WILL CONTAIN IMPORTANT, USEFUL, AND ACCURATE INFORMATION, SO THEY WILL ALWAYS TRY TO READ EACH AND EVERY MESSAGE. We do not want our motorists to believe that the messages are not pertinent. Providing inaccurate, confusing non-priority messages will reduce the motorists interest in reading future PCMS messages thus losing their credibility.

The PCMS shall provide a 18 inches character height with a maximum eight characters per line and three lines per message. 'Commuters' would be familiar with street names. 'Tourists' would be unfamiliar with the street names, but would identify the route numbers. When providing dates, use words for numbers whenever possible because they are easier to read and comprehend. For example, use the format 'JUL 24' instead of 7/24/94. Also when possible, use days instead of dates for upcoming construction. "Sat-Sun" is easier to understand than "4/13 – 4/14."

Default Messages (Power Lost)

All message boards allow for default messages to be displayed if the power is lost to the PCMS. The default message shall be "Drive Safely".

PCMS Is Not In Use

When a PCMS is not needed for a priority message as contained in these guidelines, it shall be turned off and removed from the immediate traffic area as per the Standard Specifications for Construction. Use of non-priority (filler) messages simply because the PCMS is available is discouraged.

ABBREVIATIONS

Because of limitations due to PCMS size or the message length, it is sometimes necessary to abbreviate words. However, the use of abbreviations should be used to a minimum. The following are nationally recognized abbreviations for frequently used words.

Standard Abbreviations

WORD MESSAGE	STANDARD ABBREVIATION
Afternoon/Evening	PM
Alternate	ALT
Avenue	AVE, AV
Bicycle	BIKE
Boulevard	BLVD
Cannot	CANT
Center	CNTR
Circle	CIR
Civil Defense	CD
Court	CT
Crossing (other than highway-rail)	XING
Do Not	DON'T
Drive	DR
Emergency	EMER
Entrance, Enter	ENT
Expressway	EXPWY
Feet	FT
FM Radio	FM
Freeway	FWY
Friday	FRI
Hazardous Material	HAZMAT
Highway	HWY
Highway-Rail Grade Crossing Pavement Marking	RXR
Hospital	H
Hour(s)	HR
Information	INFO
It Is	ITS
Junction/Intersection	JCT
Lane	LN
Left	LFT
Maintenance	MAINT
Mile(s)	MI
Miles Per Hour	MPH

WORD MESSAGE	STANDARD ABBREVIATION
Minute(s)	MIN
Monday	MON
Morning/Late Night	AM
Normal	NORM
Parking	PKING
Parkway	PKWY
Pedestrian	PED
Place	PL
Pounds	LBS
Right	RHT
Road	RD
Saturday	SAT
Service	SERV
Shoulder	SHLDR
Slippery	SLIP
Speed	SPD
Street	ST
Sunday	SUN
Telephone	PHONE
Temporary	TEMP
Terrace	TER
Thursday	THURS
Traffic	TRAF
Trail	TR
Travelers	TRAVLRS
Tuesday	TUES
Two-Way Intersection	2-WAY
Two-Wheeled Vehicles	CYCLES
US Numbered Route	US
Vehicle(s)	VEH
Warning	WARN
Wednesday	WED
Will Not	WONT

Abbreviations Used With Prompts

Other abbreviations are easily understood when they appear with a prompt word commonly associated with it. The prompt must be spelled when used with the abbreviated word. The prompts and abbreviations are as follows:

WORD	ABBREVIATION	PROMPT WORD
Access	ACCS	Road
Ahead	AHD	Fog*
Blocked	BLKD	Lane*
Bridge	BRDG	(Name)*
Chemical	CHEM	Spill
Condition	COND	Traffic*
Congested	CONG	Traffic*
Construction	CONST	Ahead
Downtown	DWNTN	Traffic
Exit	EXT	Next*
Express	EXP	Lane
Frontage	FRNTG	Road
Hazardous	HAZ	Driving
Interstate	I	[Number]
Local	LOC	Traffic
Major	MAJ	Accident
Minor	MNR	Accident
Minute(s)	MIN	(Number)*
Oversized	OVRSZ	Load
Pavement	PVMT	Wet*
Prepare	PREP	To Stop
Quality	QLTY	Air*
Roadwork	RDWK	Ahead [Distance]

WORD	ABBREVIATION	PROMPT WORD
Route	RT, RTE	Best*
Township	TWNSHP	Limits
Turnpike	TRNPK	(Name)*
Cardinal Directions	NB, EB, SB, WB	(Number)
Upper, Lower	UPR, LWR	Level
Work	WRK	Road*

* = Prompt word given first

Caution should be used in employing these abbreviations with other prompt words since their high level of understanding has been established only with the words given in the table. For example, drivers very easily interpret BLKD as BLOCKED when it appears with LANE in the form LANE BLKD. CHEM is interpreted by drivers as CHEMICAL when used in the message as CHEM SPILL.

Unacceptable Abbreviations

ABBREVIATION	INTENDED WORD	COMMON MISINTERPRETATIONS
ACC	Accident	Access (Road)
CLRS	Clears	Colors
DLY	Delay	Daily
FDR	Feeder	Federal
L	Left	Lane (Merge)
LT	Light (Traffic)	Left
PARK	Parking	Park
POLL	Pollution (Index)	Poll
RED	Reduce	Red
STAD	Stadium	Standard
WRNG	Warning	Wrong

EXAMPLES BY APPLICATION

Advance Time Notification

Ramp Closure

Seq #1

I-696 AT
DEQUINDR
TO CLOSE

Seq #2

7 PM
SAT

Lane Closure

Seq #1

RIGHT LN
CLOSED
MONDAY

Seq #2

CONSIDER
OTHER
ROUTES

Planned Maintenance Work

Seq #1

ROAD WRK
NEXT
WEEK

Seq #2

EXPECT
TRAFFIC
BACKUPS

Information During Existing Event

Detours/Alternate Routes

Seq #1

TRAFFIC
BACKUPS
AHEAD

Seq #2

USE
SERVICE
DRIVES

Seq #1

INKSTER
EXIT
CLOSED

Seq #2

USE
MIDDLBLT
EXIT

Incident Management

Seq #1

CAUTION
FREEWAY
CLOSED

Seq #2

FWY CLSD
STOP
AHEAD

Seq #1

CAUTION
FREEWAY
CLOSED

Seq #2

USE
SAFETY
RD EXIT

Special Event Traffic Conditions

Seq #1

CROSS
WALK
AHEAD

Seq #2

CAUTION
PEOPLE
CROSSING

Traffic Calming

Seq #1

M-5/10 MI
INTRCHNG
CONSTRCTC

Seq #2

EXIT TO
10 MILE
NOW OPEN

Seq #1

CONCRETE
CURING

Seq #2

LANE
REOPENED
JULY 24

Use of PCMS on MDOT Construction Projects

Whenever the bid items, Sign, Portable, Changeable, Furn and Oper are included in a MDOT proposal, the use of the PCMS shall be included in the Special Provision for Maintaining Traffic. The use of the PCMS will consist of Proposed PCMS location(s) and message(s) as shown on the plans/proposal or as directed by the Engineer.

PCMS Placement

The PCMS should be visible at least ½ mile under both day and night conditions. Placement in advance of the zone or incident should as much as possible, take into account the following factors:

- Where used for route diversion, the PCMS should be placed far enough in advance to allow traffic ample opportunity to exit the affected roadway.
- PCMS are normally placed level on the shoulder of the roadway, perpendicular to traffic. If practical, placement further from the traveled lane is strongly desirable.
- Delineate the PCMS with two plastic drums with attached lights.
- When two signs are needed to communicate multiple messages, they should be placed on the same side of the roadway, separated by at least 1000 ft.